The State-of-the-Art Trends in Education Strategy for Sustainable Development of the High Performance Computing Ecosystem

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Abstract. High-performance computing (HPC) plays very important role in the sphere of information technology as well as defines the strategic direction for inter- and trans-disciplinary breakthroughs ensuring the essential influence on local and global markets. The current status of HPC systems development in different countries is analyzed in the paper. The constraints for an active involvement the HPC in many business processes of different industrial, academic and research partners deal with low competence of the regular users and lack of the HPC proficient personnel. Both the technical infrastructure development and training the competent staff with wide range of the HPC related knowledge and skills are the strategic tasks of the national level. The second task is principal for stable development of the HPC ecosystems especially forwarding to the exascale era. The features of curricula focused on education in the HPC area are considered. The experience of implementation the education strategy of Kazan Federal University in the HPC field based on skills-driven model and partnership with IT-companies is discussed.

Keywords: High performance computing · Education · Trends · Sustainable development

1 Introduction

The comprehensive informatization of the state-of-the-art society and the active introduction of information technology into the business processes of all sectors of the economy determine the intensive development of hardware and software platforms and the IT sphere in a whole.

Nowadays there is an expansion of the range and complexity of the tasks demanded by the business community. Against this background, the demand of the labor market in IT specialists of different levels and qualifications increases: from the project managers of high level (leaders, architects, project managers, etc.) to rank-and-file executors (programmer, tester, technician, etc.). The efficiency of IT companies in many ways relays with the easiness of integration the university graduates into the processes of hardware-software co-design and implementation the systems of automated data processing in accordance with the requirements and specification of the customer.

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